



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,458	02/20/2002	William Frank Micka	TUC920010091US1 (14914)	6646
46263	7590	06/14/2007	EXAMINER	
SCULLY, SCOTT, MURPHY, & PRESSER 400 GARDEN CITY PL GARDEN CITY, NY 11530			CHOJNACKI, MELLISSA M	
		ART UNIT	PAPER NUMBER	
		2164		
		MAIL DATE	DELIVERY MODE	
		06/14/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/079,458	MICKA, WILLIAM FRANK
	<b>Examiner</b> Melissa M. Chojnacki	<b>Art Unit</b> 2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 March 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-11, 13-28, 30-34, 36-46 and 48-57 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-11, 13-28, 30-34, 36-46 and 48-57 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**SAM RIMELL  
PRIMARY EXAMINER**

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

**Remarks**

1. In response to communications filed on March 3, 26, 2007, no claims have been amended, 12, 29, 35 and 47 remain cancelled, no new claims have been added. Therefore claims 1-11, 13-28, 30-34, 36-46 and 48-57 are still presently pending in the application.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-11, 13-16, 18-28, 30-33, 36-46, 48-51 and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milillo et al. (U.S. Patent No. 6,643,671) in view of Beal et al. (U.S. Patent No. 6,253,295) [As disclosed in applicants "Information Disclosure Statement" filed 2/20/2002].

As to claim 1, Milillo et al. teaches destaging modified data to a first volume at the primary site for a current database update and updating one or more bits in a first bitmap at the primary site that indicate one or more tracks on the first volume that are to be overwritten with the modified data (See column 2, lines 44-53, lines 58-67); performing a first point in time virtual copy of the modified data of the first volume to a

second volume at the primary site by transferring the first bitmap to a second bitmap at the primary site for indicating the modified data that is to be transmitted to a third volume at the remote site for the current database update (See column 4, lines 47-60; column 8, lines 42-60); and synchronizing the second volume at the primary site with the third volume at the remote site for the current database update by transmitting the modified data of the second volume to the third volume as indicated by the one or more bits in the second bitmap (See column 2, lines 43-67; column 4, lines 47-60).

Milillo et al. does not teach a method for synchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site.

Beal et al. teaches a system and method for enabling pair-pair remote copy storage volumes to mirror data in another pair of storage volumes (See abstract), in which he teaches a method for synchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link (See abstract, column 2, lines 53-67; column 3, lines 1-14); and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site (See abstract; column 3, lines 27-33).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Milillo et al., to include a method

for synchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Milillo et al., by the teachings of Beal et al. because a method for synchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site would provide an improved method and apparatus for transferring copies of directories of a PPRC virtual volume pair to a second pair of co-located virtual volumes (See Beal et al., column 3, lines 5-8).

As to claims 2, 19 and 37, Milillo et al. as modified, teaches wherein the first bitmap represents a FlashCopy bitmap and the second bitmap represents a peer-to-peer remote copy (PPRC) bitmap (See Milillo et al., column 1, lines 13-20; column 2, lines 44-50, where "FlashCopy" is read on "snapshot").

As to claims 3, 20 and 38, Milillo et al. as modified, teaches wherein the first point in time virtual copy is achieved by flashcopying the modified data of the first volume to

Art Unit: 2164

the second volume (See Milillo et al., column 2, lines 44-50; column 3, lines 21-30; column 7, lines 66-67; column 8, lines 1-9; column 9, lines 24-34).

As to claims 4, 21 and 39, Milillo et al. as modified, teaches wherein the step of flashcopying initializes the one or more bits in the first bitmap (See Milillo et al., column 2, lines 44-53, where "flashcopying" is read on "snapshot copy"; column 4, lines 47-60).

As to claims 5, 22 and 40, Milillo et al. as modified, teaches wherein the second point in time virtual copy is archived by flashcopying the modified data of the third volume at the fourth volume (See Milillo et al., column 2, lines 44-53, where "flashcopying" is read on "snapshot copy"; column 4, lines 47-60; column 8, lines 29-60).

As to claims 6, 23 and 41, Milillo et al. as modified, teaches further comprising providing an application host that is associated with the first volume for performing the one or more incremental database updates (See Beal et al. abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 56-67; column 2, lines 1-6); further comprising an application host that is associated with the first volume for performing the one or more incremental database updates (See Beal et al. abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 56-67; column 2, lines 1-6).

Art Unit: 2164

As to claims 7, 24 and 42, Milillo et al. as modified, teaches further comprising a staggering the one or more incremental database updates during the current database update (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 9, lines 24-47); further comprising a means for staggering the one or more incremental database updates during the current database update (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 9, lines 24-47).

As to claims 8, 25 and 43, Milillo et al. as modified, teaches wherein staggering comprises:

determining whether a synchronization for a previous database update is complete after the destaging is preformed for the current database update (See Beal et al., abstract; column 3, lines 27-33); and waiting for the synchronization of the previous database update to complete before the performing the first point in time virtual copy for the current database update (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 56-67; column 2, lines 1-6); wherein the means for staggering determines whether a synchronization for a previous database update is complete after the destaging is performed for the current database update (See Beal et al., abstract; column 3, lines 27-33); and waits for the synchronization of the previous database update to complete before the transferring of the first bitmap to the second bitmap for the current database update (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 56-67; column 2, lines 1-6).

As to claims 9, 26 and 44, Milillo et al. as modified, teaches initializing the first bitmap for a next database update after performing the first point in time virtual copy for the current database update (See Milillo et al., column 2, lines 44-53; column 4, lines 47-60; column 8, lines 42-60, where “flashcopying” is read on “snapshot copying”); and waiting for the next database update after synchronizing for the current database update (See Beal et al., abstract; column 3, lines 27-33); wherein the means for staggering initializes the first bitmap for a next database update after the first means performs the point in time virtual copy for the current database update (See Milillo et al., column 2, lines 44-53; column 4, lines 47-60; column 8, lines 42-60, where “flashcopying” is read on “snapshot copying”); and waits for the next database update after the means for synchronizing synchronizes the second volume with the third volume for the current database update (See Beal et al., abstract; column 3, lines 27-33).

As to claims 10, 27 and 45, Milillo et al. as modified, teaches wherein the synchronizing is achieved by establishing a peer to peer remote copy session between the second volume and the third volume for physically transmitting the modified data of the second volume over the at least one communication link to the third volume (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 35-48, lines 56-67; column 2, lines 1-6); wherein the means for synchronizing establishes a peer to peer remote copy session between the second volume and the third volume for physically transmitting the modified data of the second volume over the at least one

Art Unit: 2164

communication link to the third volume (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 35-48, lines 56-67; column 2, lines 1-6).

As to claims 11, 28 and 46, Milillo et al. as modified, teaches further comprising a providing a controller at the primary site for managing access to both the first volume and the second volume (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 3, lines 35-49; column 6, lines 53-67); and providing a controller at the remote site for managing access to the third volume and the fourth volume (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 3, lines 35-49; column 6, lines 53-67); further comprising means for managing access to both the first volume and the second volume (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 3, lines 35-49; column 6, lines 53-67); and means for managing access to the third volume and the forth volume (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 3, lines 35-49; column 6, lines 53-67).

As to claims 13, 30 and 48, Milillo et al. as modified, initializing the first bitmap to indicate that all data on the first volume is to be copied to the second volume and all data that is copied to the second volume is to be copied to the third volume (See Milillo et al., column 2, lines 44-53, lines 58-63; column 4, lines 47-60; column 8, lines 42-60); means for initializing the first bitmap to indicate that all data of the first volume is to be copied to the second volume and all data that is copied to the second volume is to be

copied to the third volume (See Milillo et al., column 2, lines 44-53, lines 58-63; column 4, lines 47-60; column 8, lines 42-60);

As to claims 14, 31 and 49, Milillo et al. as modified, teaches further comprising providing a recovery host that is associated with the forth volume for recovering from a failure of the primary site by providing access to the forth volume (See Milillo et al., column 8, lines 42-67, where "recovery host" is read on "recovery operation"; column 10, lines 38-54).

As to claims 15, 32 and 50, Milillo et al. as modified, teaches further comprising automatically initiating the incremental database updates (See Milillo et al., column 15, lines 20-23); the system further comprising a means for automatically initiating the incremental database updates (See Milillo et al., column 15, lines 20-23).

As to claims 16, 33 and 51, Milillo et al. as modified, inspecting the one or more bits of the first bitmap at the primary site to determine whether the second volume includes data of the one or more tracks on the first volume that are to be overwritten with the modified data (See Milillo et al., column 2, lines 44-53, lines 58-67); and performing a point in time virtual copy from the first volume to the second volume of the data of the one or more tracks on the first volume that are to be overwritten with the modified data if the first bitmap indicates that the second volume does not include the data of the one or more tracks on the first volume that are to be overwritten with the

Art Unit: 2164

modified data (See Milillo et al., column 2, lines 44-53; column 4, lines 47-60); means for inspecting the one or more bits of the first bitmap at the primary site to determine whether the second volume includes data of the one or more tracks on the first volume that are to be overwritten with the modified data (See Milillo et al., column 2, lines 44-53, lines 58-67); and means for performing a point in time virtual copy from the first volume to the second volume of the data of the one or more tracks on the first volume that are to be overwritten with the modified data if the first bitmap indicates that the second volume does not include the data of the one or more tracks on the first volume that are to be overwritten with the modified data (See Milillo et al., column 2, lines 44-53; column 4, lines 47-60).

As to claim 18, Milillo et al. teaches a means for destaging modified data to a first volume at the primary site for a current database update and updating one or more bits in a first bitmap at the primary site that indicate one or more tracks on the first volume that are to be overwritten with the modified data (See column 2, lines 44-53, lines 58-67); first means for performing a first point in time virtual copy of the modified data of the first volume to a second volume at the primary site by transferring the first bitmap to a second bitmap at the primary site for indicating the modified data that is to be transmitted to a third volume which is at the remote site for the current database update (See column 4, lines 47-60; column 8, lines 42-60); and means for synchronizing the second volume with the third volume for the current database update by transmitting the

Art Unit: 2164

modified data of the second volume to the third volume as indicated by the one or more bits in the second bitmap (See column 2, lines 43-67; column 4, lines 47-60).

Milillo et al. does not teach a system for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site.

Beal et al. teaches a system and method for enabling pair-pair remote copy storage volumes to mirror data in another pair of storage volumes (See abstract), in which he teaches a system for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link (See abstract, column 2, lines 53-67; column 3, lines 1-14); performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site (See abstract; column 3, lines 27-33).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Milillo et al., to include a system for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Milillo et al., by the teachings of Beal et al. because a system for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site would provide an improved method and apparatus for transferring copies of directories of a PPRC virtual volume pair to a second pair of co-located virtual volumes (See Beal et al., column 3, lines 5-8).

As to claim 36, Milillo et al. teaches (a) destaging modified data to a first volume at the primary site for a current database update and updating one or more bits in a first bitmap at the primary site that indicate one or more tracks on the first volume that are to be overwritten with the modified data (See column 2, lines 44-53, lines 58-67);

(b) performing a first point in time virtual copy of the modified data of the first volume to a second volume at the primary site by transferring the first bitmap to a second bitmap at the primary site for indicating the modified data that is to be transmitted to a third volume at the remote site for the current database update (See column 4, lines 47-60; column 8, lines 42-60); and

(c) synchronizing the second volume at the primary site with the third volume at the remote site for the current database update by transmitting the modified data of the

Art Unit: 2164

second volume to the third volume as indicated by the one or more bits in the second bitmap (See column 2, lines 43-67; column 4, lines 47-60).

Milillo et al. does not teach a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link (See abstract, column 2, lines 53-67; column 3, lines 1-14); and (d) performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site (See abstract; column 3, lines 27-33).

Beal et al. teaches a system and method for enabling pair-pair remote copy storage volumes to mirror data in another pair of storage volumes (See abstract), in which he teaches a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link (See abstract, column 2, lines 53-67; column 3, lines 1-14); and (d) performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site (See abstract; column 3, lines 27-33).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Milillo et al., to include a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental

Art Unit: 2164

database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and (d) performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Milillo et al., by the teachings of Beal et al. because a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and (d) performing a second point in time virtual copy of the modified data of the third volume to a fourth volume, which is at the remote site would provide an improved method and apparatus for transferring copies of directories of a PPRC virtual volume pair to a second pair of co-located virtual volumes (See Beal et al., column 3, lines 5-8).

As to claims 53-55, Milillo et al., as modified, teaches wherein during the synchronizing, the first volume is accessible to a host at the primary site, and the four volume is accessible to a host at the remote site (See Beal et al., abstract; column 3, lines 27-33; also see Milillo et al., column 1, lines 56-67; column 2, lines 1-6).

As to claim 56, Milillo et al., teaches a method for backing up data from a primary site to a remote site (See column 2, lines 31-42) comprising:

- (a) destaging modified data to a first volume at the primary site for a current database update (See column 2, lines 44-53, lines 58-67);
- (b) performing a first point in time virtual copy of the modified data of the first volume to a second volume at the primary site (See column 4, lines 47-60; column 8, lines 42-60); and
- (c) synchronizing the second volume with a third volume at the remote site by transmitting the modified data of the second volume to the third volume (See column 2, lines 43-67; column 4, lines 47-60).

Milillo et al. does not teach a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; and (d) after completion of the synchronizing, performing a second point in time virtual copy of the modified data of the third volume to a fourth volume at the remote site.

Beal et al. teaches a system and method for enabling pair-pair remote copy storage volumes to mirror data in another pair of storage volumes (See abstract), in which he teaches a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link (See abstract, column 2, lines 53-67; column 3, lines 1-14); (d) after completion of

the synchronizing, performing a second point in time virtual copy of the modified data of the third volume to a fourth volume at the remote site (See abstract; column 3, lines 27-33).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Milillo et al., to include a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; (d) after completion of the synchronizing, performing a second point in time virtual copy of the modified data of the third volume to a fourth volume at the remote site.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Milillo et al., by the teachings of Beal et al. because a program storage device, tangibly embodying a program of instructions executable by a machine to perform a method for asynchronously transmitting one or more incremental database updates from a primary site to a remote site, the primary site and the remote site interconnected by at least one communication link; (d) after completion of the synchronizing, performing a second point in time virtual copy of the modified data of the third volume to a fourth volume at the remote site would provide an improved method and apparatus for transferring copies of directories of a PPRC virtual volume pair to a second pair of co-located virtual volumes (See Beal et al., column 3, lines 5-8).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 34 and 52, are rejected under 35 U.S.C. 103(a) as being unpatentable over Milillo et al. (U.S. Patent No. 6,643,671) in view of Beal et al. (U.S. Patent No. 6,253,295), as applied to claims 1-11, 13-16, 18-28, 30-33, 36-46, 48-51 and 53-56 above, and further in view of Crockett et al. (U.S. Patent No. 5,504,861).

As to claims 17, 34 and 52, Milillo et al. as modified, still does not teach wherein the at least one communication link is comprises at least one of a channel link; a T1/T3 link; a Fibre channel; and an ESCON link.

Crockett et al. teaches remote data duplexing (See abstract), in which he teaches wherein the at least one communication link is comprises at least one of a channel link; a T1/T3 link; a Fibre channel; and an ESCON link (See Crockett et al., column 7, lines 6-20).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Milillo et al., to include wherein the at least one communication link is comprises at least one of a channel link; a T1/T3 link; a Fibre channel; and an ESCON link.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Milillo et al., by the teachings of Crockett et al. because wherein the at least one communication link is comprises at least one of a channel link; a T1/T3 link; a Fibre channel; and an ESCON link would provide a method and apparatus for providing a real time update of data consistent with the data at a primary processing location using minimal control data, wherein the method and apparatus operates independently of a particular application data being recovered, that is, generic storage media based rather than specific application data based (See Crockett et al., column 2, lines 49-55).

#### ***Response to Arguments***

5. Applicant's arguments filed on 26-March-2007, with respect to the rejected claims 1-11,13-28, 30-34, 36-46 and 48-57 have been fully considered but they are not found to be persuasive:

In response to applicants' arguments regarding "neither Milillo nor Beal, whether taken alone or in combination, discloses every element claimed in independent claims of the present application. For instance, Mitillo does not disclose or suggest at least 'performing a first point in time virtual copy of the modified data of the first volume to a second volume at the primary site' recited in independent claims 1, 18, 36 and 56", the arguments have been fully considered but are not found to be persuasive, because the claim language states that the "virtual copy " is done "**by transferring** the first bitmap to a second bitmap" and Milillo et al. discloses a system that "comprises a target storage volume for receiving a copy of the initial data file and a copy of the write

command record from the source volume, and a secondary volume for storing a copy of the initial data file. The target volume is further for transmitting the copy of the initial data file to the secondary volume, and transmitting data indicated by the write command record to the secondary volume so that consistency is maintained at all times for the source volume" (See column 4, lines 47-65), therefore disclosing transferring one file to another. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mellissa M. Chojnacki whose telephone number is (571) 272-4076. The examiner can normally be reached on 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2164

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

June 8, 2007  
Mmc



SAM RIMELL  
PRIMARY EXAMINER